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October 29, 2004
LIC-04-0102

U. S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, D.C. 20555

- References:
1. Docket No. 50-285
 2. Letter from OPPD (R. L. Phelps) to NRC (Document Control Desk) dated May 21, 2004, "Trisodium Phosphate (TSP) Dodecahydrate Volume" (LIC-04-0045)
 3. Letter from NRC (A. B. Wang) to OPPD (R. T. Ridenoure) dated August 27, 2004, Request for Additional Information (TAC No. MC3214) (NRC-04-0111)

SUBJECT: Request For Additional Information (RAI) Regarding License Amendment Request (LAR), "Trisodium Phosphate (TSP) Dodecahydrate Volume"

In support of Reference 2, the Omaha Public Power District (OPPD) provides the attached response to the NRC Request for Additional Information (Reference 3). In a teleconference with the NRC Project Manager, OPPD was granted an additional 30 days to provide the attached information.

I declare under penalty of perjury that the forgoing is true and correct. (Executed on October 29, 2004). No commitments to the NRC are made in this letter.

If you have any questions or require additional information, please contact Tom Matthews at (402) 533-6938.

Sincerely,

R. L. Phelps
Division Manager
Nuclear Engineering

RLP/MLE/mle

Attachment 1: RAI Response Concerning License Amendment Request, "Trisodium Phosphate (TSP) Dodecahydrate Volume"

Response to Request For Additional Information Regarding License Amendment Request, "Trisodium Phosphate (TSP) Dodecahydrate Volume"

Question 1:

Figure 2-3 denotes a linear relationship between the minimum volume required of TSP to maintain pH above 7 associated with various reactor coolant system critical boron concentrations. OPPD should clarify if other mechanisms causing loss of TSP besides densification exist and how were they incorporated in the process of construction of the graph in Figure 2-3.

OPPD Response:

The trisodium phosphate (TSP) baskets are loaded with a volume of TSP in excess of that required by technical specifications to offset the volume reduction that occurs over the course of an operating cycle from densification. No other credible material loss mechanisms have been identified.

Question 2:

On page 6 of the submittal, OPPD stated that due to densification, the volume of TSP in the baskets typically decreases by approximately 5 percent. The densification process causes a proportional increase in density by reducing the volume. If there is no mass loss of TSP during the entire cycle, the amount of TSP corresponding to 131.9 ft³ would produce a low pH value at the beginning of cycle [BOC] when boric acid concentration is high and a high pH value at the end of the cycle [EOC] when boric acid concentration is low. What are these values of pH? Won't the high pH value at the end of cycle negatively impact the equipment environmental qualification [EEQ]? Please explain.

OPPD Response:

It is not practical to specify the exact pH value that would be achieved in the containment sump for a loss-of-coolant accident (LOCA) at BOC as the RCS boron concentration at BOC may vary from cycle to cycle. Figure 2-3 of the License Amendment Request (Reference 2) bounds the boron concentration range of the RCS from BOC to EOC for current and future operating cycles; thus, the corresponding volume of TSP is sufficient to ensure a $\text{pH} \geq 7.0$ from BOC to EOC.

OPPD has determined that EEQ is maintained with the current mass-equivalent amount of TSP in containment. However, OPPD has also determined that enhanced administrative controls are needed to ensure that the maximum mass-equivalent limit of TSP for EEQ is not exceeded in the

future. This issue has been incorporated into the plant corrective action program (CR 200403451) for tracking and completion.

Question 3:

Do the hydrated forms of TSP have different densities than the dodecahydrate form? If a difference exists, provide its value for a hydrated TSP with specific moisture content (in 47-57% range) used in your calculations.

OPPD Response:

OPPD has determined that the term “dodecahydrate” does not provide sufficient information and relevance concerning its density and other properties. As stated in Reference 2, the requested change in nomenclature for the TSP will make Technical Specification 2.3(4) and its Basis consistent with NUREG-1432, “Standard Technical Specifications – Combustion Engineering Plants,” which does not require a specific type of TSP. The OPPD procurement specifications for TSP have consistently required the following chemical and physical properties:

Assay - Na_3PO_4 :	92.0% Minimum
Total Moisture:	47 – 54.2%
pH , 1% Solution:	11.8 – 12.4 pH
Density:	$\geq 53 \text{ lbm/ft}^3 (0.85 \text{ g/cm}^3)$

Sizing, USSS:

Through 10 Mesh:	100% Minimum
Through 100 Mesh:	5% Maximum

The most limiting combination of parameters as specified in the procurement specification have been used in the Fort Calhoun Station (FCS) calculations in regard to TSP volumes and obtaining the most conservative analysis possible.